

WHAT IS CLAIMED IS:

1. A single cell of a flat plate type solid oxide fuel cell comprising:
a first electrode member consisting of a porous substrate;
an electrolyte film formed on either a front surface or a back surface of said first electrode member;
a second electrode member formed on said electrolyte film;
a separator film formed on the other surface of said first electrode member;
said first electrode member being one of a fuel electrode and an air electrode and said second electrode member being the other one of said fuel electrode and said air electrode; and
a seal portion covering all side surfaces of said first electrode member.
2. A single cell of a flat plate type solid oxide fuel cell according to claim 1, wherein at least one of a part of said electrolyte film and a part of said separator film comprises said seal portion and functions as a gas seal film.
3. A single cell of a flat plate type solid oxide fuel cell according to claim 2, wherein said seal portion includes a side film portion which covers each entire area of side surfaces of one of two pairs of opposed side surfaces of said first electrode member and seals said covered side surfaces to prevent a gas from escaping.

4. A single cell of a flat plate type solid oxide fuel cell according to claim 1, wherein at least one of said electrolyte film and said separator film is formed by a wet process relative to said first electrode member.

5. A cell stack of a flat plate type solid oxide fuel cell comprising a laminated body constituted by laminating single cells defined in claim 1, in series and including a laminated body having a conductive spacer provided between said single cells adjacent to each other in a lamination direction.

6. A cell stack of a flat plate type solid oxide fuel cell according to claim 5, wherein said spacer is a porous substrate.

7. A cell stack of a flat plate type solid oxide fuel cell according to claim 6, wherein said porous substrate consists of a material which is the same as that of said second electrode member.

8. A cell stack of a flat plate type solid oxide fuel cell according to claim 5, wherein a conductive jointing material is provided between said spacer and said separator film opposed to each other in said single cells which are adjacent to each other.

9. A cell stack of a flat plate type solid oxide fuel cell according to claim 5, wherein manifold plates formed of ceramics are attached on side surfaces of

said laminated body.

10. A cell stack of a flat plate type solid oxide fuel cell according to claim 9, wherein said ceramics is free-cutting glass ceramics.

11. A cell stack of a flat plate type solid oxide fuel cell according to claim 5, wherein the lamination direction of said laminated body is set horizontal, and said first electrode member and said spacer are orthogonally arranged.

12. A single cell of a flat plate type solid oxide fuel cell comprising: a first electrode member consisting of a porous substrate through which a fuel gas or air passes; an electrolyte film formed on either a front surface or a back surface of said first electrode member; a second electrode member formed on said electrolyte film; and a separator film formed on the other surface of said first electrode member, wherein said first electrode member is one of a fuel electrode and an air electrode, and said second electrode member is the other one of said fuel electrode and said air electrode, and said first electrode member itself being as a sole gas flow path, both front and back surfaces of said first electrode member being covered with said electrolyte film and said separator film respectively; at least one of a part of said electrolyte film and a part of and /or said separator film being a seal portion which covers a part of side surfaces between said electrolyte film and said separator film of said first electrode member and functions as a gas seal film, said seal portion including a side film

portion which covers each entire area of side surfaces of one of two pairs of opposed side surfaces of said first electrode member and seals said covered side surfaces to prevent a gas from escaping.

13. A single cell of a flat plate type solid oxide fuel cell comprising: a single cell having electrolyte; a first electrode member and a second electrode member with said electrolyte sandwiched therebetween; and a separator arranged on a surface side opposite to said electrolyte side of one of said first electrode member and said second electrode member, wherein at least one of said first electrode member and second electrode member is formed from a porous substrate through which a fuel gas or air passes, respective said electrolyte and said separator are filmily formed directly to a surface of said electrode member formed from said porous substrate, a front surface and a back surface of said porous substrate are sealed with said electrolyte film and said separator film respectively and a gas inflow/outflow opening is formed to a side surface of said substrate to prevent a gas from escaping, and said electrode member itself is constituted as a gas flow path.